

102 ✓ A1 (1) (Amended) A process for producing guanosine 5'-diphospho-fucose, comprising:

allowing guanosine 5'-diphospho-4-keto-6-deoxymannose ("GKDM") and an enzyme source to be present in an aqueous medium, wherein the enzyme source is a culture broth of a microorganism capable of converting GKDM into guanosine 5'-diphospho-fucose ("GDP-fucose") or a treated product of the culture broth selected from the group consisting of a concentrated product of the culture broth, a dried product of the culture broth, cells obtained by centrifuging the culture broth, a dried product of the cells, a freeze-dried product of the cells, a surfactant-treated product of the cells, a solvent-treated product of the cells, an enzyme-treated product of the cells and an immobilized product of the cells;

forming and accumulating GDP-fucose in the aqueous medium; and
recovering the GDP-fucose from the aqueous medium.

102 ✓ (2) (Amended) A process for producing guanosine 5'-diphospho-fucose, comprising:

allowing a guanosine 5'-triphosphate ("GTP") precursor, a saccharide and enzyme sources to be present in an aqueous medium, wherein the enzyme sources are (i) a culture broth of a microorganism capable of forming GTP from said GTP precursor or a treated product of the culture broth, and (ii) a culture broth of a microorganism capable of forming guanosine 5'-diphospho-4-keto-6-deoxymannose ("GKDM") from said saccharide and GTP or a treated product of the culture broth;

forming and accumulating GKDM in the aqueous medium;

converting the accumulated GKDM into guanosine 5'-diphospho-fucose ("GDP-fucose") using, as an enzyme source, a culture broth of a microorganism

capable of converting GKDM into GDP-fucose or a treated product of the culture broth to form and accumulate GDP-fucose in the aqueous medium; and

recovering the GDP-fucose from the aqueous medium,

wherein the treated products of the culture broth are treated products independently selected from the group consisting of a concentrated product of the culture broth, a dried product of the culture broth, cells obtained by centrifuging the culture broth, a dried product of the cells, a freeze-dried product of the cells, a surfactant-treated product of the cells, a solvent treated product of the cells, an enzyme-treated product of the cells and an immobilized product of the cells.

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cont.

3. (Amended) A process for producing guanosine 5'-diphospho-4-keto-6-deoxymannose, comprising:

allowing a guanosine 5'-triphosphate ("GTP") precursor, a saccharide and enzyme sources to be present in an aqueous medium, wherein the enzyme sources are (i) a culture broth of a microorganism capable of forming GTP from said GTP precursor or a treated product of the culture broth, and a (ii) culture broth of a microorganism capable of forming guanosine 5'-diphospho-4-keto-6-deoxymannose ("GKDM") from said saccharide and GTP or a treated product of the culture broth,

wherein the treated product of the culture broth is a treated product independently selected from the group consisting of a concentrated product of the culture broth, a dried product of the culture broth, cells obtained by centrifuging the culture broth, a dried product of the cells, a freeze-dried product of the cells, a surfactant-treated product of the cells, a solvent-treated product of the cells, an enzyme-treated product of the cells and an immobilized product of the cells,

forming and accumulating GKDM in the aqueous medium; and

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